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Record 1

Serial number TDB1282.0113

Field Name	Contents of Record 1
Size of Record	2320 total bytes in record, 2108 in TX field
Title	Laser **Activated** Cleaning and Etching System and Method. December 1982.
Publication Date	December, 1982
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Text of Submission	2p. This is a system and method of treatment of a surface to be inspected or coated or otherwise treated in a vacuum system. This system provides a **laser -activated** gas which reacts with the surface of a sample to clean the surface or to thin the surface. This system can be employed to treat a surface located within a surface analyzer, a vacuum system or an electron microscope. The sample is placed within the apparatus which is to operate upon it. Located within the apparatus is a movable nozzle which supplies an inert gas which is capable of being energized by **laser** radiation to react locally with the surface of the sample. The gas reacts locally with the surface in the regions irradiated by the **laser.** For example, an inert polyatomic gas such as SF(6), reacts with Si in response to a focussed argon ion **laser.** The gases emitted during the reaction of the gas with Si are inert. Thus, etching of the Si surface can be performed rapidly without producing contamination. As soon as the inert gases have been evacuated from the system, the apparatus can be operated to produce the measurement or other result required. Fig. 1 shows a TEM (transmission electron microscope) system employing this system and method. A vacuum column extends vertically housing electron lenses B. A specimen holder C extends through the side wall of column A. A specimen D is supported by C. A movable nozzle E is aimed to direct a gas at the specimen D. The lower wall of the microscope includes a viewing port F through which a **laser** beam G is directed to reflect from a movable mirror H to strike specimen D on predetermined locations on its surface.

	Fig. 2 shows a vacuum deposition system employing this method. In this case **laser** beam J is directed through window K in the wall W of the vacuum chamber 0 to strike mirror M within the chamber. The **laser** beam Q is reflected from mirror M onto substrate L. A movable nozzle N is supported by a feedthrough R in opposing wall X of the vacuum chamber 0. The evaporation sources or sputtering targets are located in direction P below the substrate L.
Reference (pointer to work)	IBM TDB 12-82 p3775-3776 Order: 82A 62055
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